

REPORT DOCUMENTATION PAGE			Form Approved OMB No. 0704-0188	
Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503.				
1. AGENCY USE ONLY (Leave blank)		2. REPORT DATE		3. REPORT TYPE AND DATES COVERED
4. TITLE AND SUBTITLE The Impact of Deployment History on the Wellbeing of Military Personnel: The Gender Effect				5. FUNDING NUMBERS
6. AUTHOR(S) Ann H. Huffman, Amy B. Adler, and Carl A. Castro				
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Commander Attn: Medical Research Unit CMR 442 APO AE 09042				8. PERFORMING ORGANIZATION REPORT NUMBER
9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES) US Army Medical Research & Materiel Command Ft. Detrick, Fredrick, MD 21702-5012				10. SPONSORING / MONITORING AGENCY REPORT NUMBER
11. SUPPLEMENTARY NOTES				
12a. DISTRIBUTION / AVAILABILITY STATEMENT Approved for public release; distribution unlimited				12b. DISTRIBUTION CODE
13. ABSTRACT (Maximum 200 words) The present study examines the effects of deployment history on the psychological health of male and female military personnel. Previous research (Huffman, Adler & Castro, 1999) has shown that deployment history is a significant factor in understanding soldiers' psychological wellbeing. This study investigates the effect of gender on the relationship between deployment history and psychological wellbeing. Male and female personnel (N=12,336) re-deploying from the NATO mission in the former Yugoslavia (e.g. Hungary and Bosnia-Herzegovina) were assessed for symptoms of posttraumatic stress, depression, and alcohol problems. Personnel scoring above criteria on the primary clinical screen scales received an interview to determine referral need. There were no gender differences in exceeding criteria on the overall primary screen. However, gender differences were evident in the nature of the relationship between deployment history and psychological wellbeing. For men, first time deployments and longer deployments were associated with an increase in meeting criteria on one of the clinical scales. In contrast, women's overall primary screen rates remained relatively stable throughout the deployment regardless of how long they were deployed or whether they had been previously deployed. The findings suggest distinct gender differences in the impact of deployment history on soldier health and in understanding the resilience of soldiers under chronic moderate stress conditions.				
14. SUBJECT TERMS gender, deployment, psychological wellbeing, army, stress				15. NUMBER OF PAGES
				16. PRICE CODE
17. SECURITY CLASSIFICATION OF REPORT UNCLAS	18. SECURITY CLASSIFICATION OF THIS PAGE UNCLAS	19. SECURITY CLASSIFICATION OF ABSTRACT UNCLAS	20. LIMITATION OF ABSTRACT	

20010220 074

The Impact of Deployment History

On the Wellbeing of Military Personnel: The Gender Effect

Ann H. Huffman, M.Ed., Amy B. Adler, Ph.D. & Carl A. Castro, Ph.D.

U.S. Army Medical Research Unit-Europe

Walter Reed Army Institute of Research

The views expressed are those of the authors and are not necessarily those of the U.S. Army, Europe, & Seventh Army, the U.S. Army or the Department of Defense.

Paper presented at the American Psychological Association Convention, August 2000, Washington D.C.

Address Correspondence to: The U.S. Army Medical Research Unit-Europe,
Nachrichten Kaserne, Karlsruher Str. 144, 69126 Heidelberg, Germany or send US mail
to: Commander, CMR 442, ATTN: Medical Research Unit, APO AE 09042
e-mail: Ann.Huffman@hbg.amedd.army.mil
Website: www.hqusareur.army.mil/MedicalResearchUnit/index.htm

Abstract

The present study examines the effects of deployment history on the psychological health of male and female military personnel. Previous research (Huffman, Adler & Castro, 1999) has shown that deployment history is a significant factor in understanding soldiers' psychological wellbeing. This study investigates the effect of gender on the relationship between deployment history and psychological wellbeing. Male and female personnel (N= 12,336) re-deploying from the NATO mission in the former Yugoslavia (e.g. Hungary and Bosnia-Herzegovina) were assessed for symptoms of posttraumatic stress, depression, and alcohol problems. Personnel scoring above criteria on the primary clinical screen scales received an interview to determine referral need. There were no gender differences in exceeding criteria on the overall primary screen. However, gender differences were evident in the nature of the relationship between deployment history and psychological wellbeing. For men, first time deployments and longer deployments were associated with an increase in meeting criteria on one of the clinical scales. In contrast, women's overall primary screen rates remained relatively stable throughout the deployment regardless of how long they were deployed or whether they had been previously deployed. The findings suggest distinct gender differences in the impact of deployment history on soldier health and in understanding the resilience of soldiers under chronic moderate stress conditions.

The Impact of Deployment History

On the Wellbeing of Military Personnel: The Gender Effect

Considerable research has been conducted on the effects of deployments and resultant psychological wellbeing of military personnel. While numerous studies have focused on soldier reactions to stressors associated with combat-related duty (e.g. Wolfe, Brown, Furey & Levin, 1993), far fewer studies, have examined soldier adjustment to non-combat deployments such as peacekeeping or humanitarian missions despite the fact that these types of missions are increasingly common. The degree to which results from combat-related studies (e.g Kulka et al., 1990) apply to the soldier experience in other types of missions is unclear (see Litz , 1996, for a discussion of this contrast).

The nature of the stressors associated with combat deployments is different than peacekeeping and humanitarian missions. One finding from combat-related studies is that deployment history predicts soldier adjustment. Specifically, having been deployed (Kulka et al., 1990), the length of the deployment (Vincent, Chamberlain, & Long, 1994), and the number of deployments (McCarroll, Fagain, Hermesen, & Ursano, 1997) was predictive of increased psychological maladaptation. The extent to which this positive relationship between deployment history and soldier wellbeing applies to non-combat deployments is a critical question given the increased frequency of non-combat deployments and even repeat deployments on the same mission (Castro & Adler, 1999). In addition, there have been several peacekeeping studies that have examined the role of deployment history but few have specifically examined the female soldiers' experience.

Deployment length has emerged as a significant factor for male soldier adjustment during a peacekeeping deployment. The Portuguese Army Centre of Applied

Psychology examined the effects of deployment length during a peacekeeping mission (da Silva, Paiva, Elsa, Rodrigues & Ricardo, 1998). A Portuguese military unit deployed to the peacekeeping operation in Bosnia-Herzegovina was administered the Symptom Distress Checklist (SCL-90) to measure psychological wellbeing. An analysis of the data indicated that at four months into the deployment soldiers were less distressed than at six months into the deployment.

Ritzer, Campbell and Valentine (1999) examined the psychological and physical status of U.S. Army units deployed to the Balkan region in support of Operation Joint Guard (OJG). Soldiers completed the Brief Symptoms Inventory (BSI) and a physical health symptoms checklist. Units that were deployed for the longest period of time reported more psychological distress and physical health symptoms than units deployed for shorter periods of time.

In a separate study of U.S. soldiers deployed to Bosnia, the wellbeing of male soldiers deployed in support of Operation Joint Endeavor was examined (Huffman, Adler & Castro, 1999; Castro & Adler, 1999). In this study, soldiers were screened for post-traumatic stress, depression and alcohol problems during the redeployment period just prior to returning to their home station. Results showed that the soldiers who were deployed for a longer period of time reported more psychological distress on all three symptom categories than soldiers who were deployed for a shorter period of time.

These three peacekeeping studies support findings from combat studies that deployment length predicts greater psychological distress. Unfortunately, these studies do not assess the effect of deployment history on female soldiers. In one of the few published studies on gender and deployment length, Pierce (1997) found that 2 years after

the Gulf War female veterans' depression rates were not related to the length of their deployment.

Another aspect of deployment history is the impact of multiple deployments. In a combat-related study (Perconte, Wilson, Pontius, Dietrick & Spiro, 1993), Persian Gulf War veterans were administered measures to assess war-related psychological distress. Both male and female veterans who deployed reported greater psychological distress than non-veterans. On a measure of depression, however, female veterans did not differ significantly from female non-veterans whereas male veterans had higher depression scores than male non-veterans.

Research focusing on the effects of multiple peacekeeping missions is also relatively limited. Male U.S. Army soldiers returning from the Balkans in support of NATO's Operation Allied Force were administered a Psychological Screening to determine psychological readiness (Martinez, Huffman, Adler & Castro, 2000). The study found that soldiers with a history of prior deployment to the Balkans reported lower rates of psychological distress, which suggests a "stress inoculation effect" associated with deployment experience.

In the Ritzer et al. (1999) study of Bosnia peacekeepers the effects of multiple deployments on peacekeepers were also investigated. The results of their research suggested that the number of deployments a soldier had experienced in the last three years was not predictive of psychological health.

The present study examines the effect of two aspects of peacekeeping deployment history (i.e. deployment length and previous deployments) on the psychological health of male and female military personnel. While there is a strong evidence for a deployment

length effect for males, it is uncertain whether this effect would be replicated in female soldiers. In addition, it was expected that there would be a multiple deployment effect for both genders.

Method

Participants

The overall sample included 12,336 U.S. soldiers deployed on a NATO peacekeeping mission to Bosnia (September 1997 to October 1999). The sample included 85.1% male and 11.4% female soldiers. The largest ethnic group was white (60.3%), followed by African American (22.8%), Hispanic (9.3%) and other (7.7%). In terms of rank, there were 48.2% junior-enlisted (E1 to E4) soldiers, 36.8% non-commissioned officers (NCO; E5 to E9), and 15.0% officers (O1 to O7). A total of 50.9% of the sample were married, 38.9% were single, 10.1% separated or divorced, and 0.1% widowed. In terms of the highest education level obtained, 35.6% were high school graduates, 49.3% had some college, and 19.4% had a college degree. In this sample of deployed soldiers, 19.1% had previous deployment experience; while for 80.9% of the sample, this was their first deployment. Table 1 contains demographic variables compared by gender.

Measures

The primary survey was a 2-page screening instrument that included demographic questions and three psychological symptom scales. Demographic questions included gender, rank and marital status. This page also included two questions concerning

deployment history: 1) number of months on the deployment the soldier was just completing and 2) how many previous times the participant had been deployed to the Balkans.

The three psychological scales measured posttraumatic stress symptoms, depression and alcohol abuse. The Post Traumatic Stress Scale (Bartone, Vaitkus, & Adler, 1994; Castro & Adler, 1999; Castro, Adler & Huffman, 1999) measures post traumatic stress symptoms. This instrument consists of a 17-item checklist with items that are rated on a 5-point scale (1="not at all," 2="rarely," 3="sometimes," 4="often," and 5="very often"). Some sample items include, "Had upsetting memories of the stressful event(s)", "Wasn't interested in things that used to be important to me," and "Had difficulty falling or staying asleep." Respondents who reported at least six symptoms (often or very often) exceeded criteria. In this sample, the internal consistency was high for both females and males (Cronbach's α =.92 and .92).

The Zung Self-rating Depression Scale (SDS; Zung, 1965), a 20-item scale, measures depressive symptoms. The items are rated on a 4-point scale (1="a little of the time," 2="some of the time," 3="good part of the time," and 4="most of the time") with a possible raw score of 20 to 80 points. The scale contains items requiring reverse scoring to reduce the influence of the acquiescence response set. A raw score of 44 points or above exceeds criteria. Additionally, personnel indicating agreement with the item "I feel that others would be better off if I were dead" also met cut-off criteria. The internal consistency for both females and males was high, Cronbach's α =.85 and .84, respectively.

A brief screen of potential alcohol abuse, the CAGE Questionnaire (Ewing & Rouse, 1970), is a 4-item scale that has "yes" or "no" response items. Examples of questions include, "Have you ever attempted to cut back on alcohol?" and "Have you ever been annoyed by comments made about your drinking?" Respondents exceeded criteria if they answered, "yes" to two or more questions. The internal consistency for this instrument while difficult to assess given the binary response options, was modest for both for females and males, Cronbach's $\alpha=.52$ and $.50$, respectively.

Procedures

Soldiers deployed to the Balkan region were administered a psychological screen within 30 days prior to redeploying back to their home station. If the soldier exceeded criteria on any one of the primary scales, they were given a Secondary Screen Interview. Based on the secondary screen, some military personnel were referred for follow-up mental health services.

Results

Overall, 15.6% of the entire sample exceeded criteria on at least one of the scales, with 17.5% of females and 15.7% of males exceeding primary screen criteria. As can be seen in Figure 1, male distress rates increased over time whereas female rates remain relatively stable. What appears at the three to four month range to be a case of higher female distress rates than male rates reverses itself at nine to ten months with male rates of distress symptoms higher than females rates.

Binary Logistic Regression was appropriate for analyses because of the mix of continuous and categorical predictor variables and a categorical (dichotomous) dependent

measure (Hosmer & Lemeshow, 1989). Using SPSS 10.0 (SPSS, Inc., 1999) separate analyses were run for the male and female population. The independent variables of rank, length of deployment (in months) and deployment experience were entered into an equation predicting individuals who would exceed criteria on any one of the three scales. Indicator contrast coding was used to dummy code the categorical variables, rank and deployment experience.

Table 2 presents the logistic regression analysis for both genders. For females, rank was the only significant predictor of exceeding primary scale criteria, with 81.9% of respondents correctly classified in terms of whether or not they exceeded criteria on any one of the three scales, Model X^2 (4, N= 1271) = 11.59, $p < .05$. For males, 84.2% of respondents were correctly classified in terms of whether or not they would exceed criteria on any one of the three scales, Model X^2 (4, N= 10,193) = 268.10, $p < .001$. Rank and length of deployment were significant in predicting male soldiers who would exceed criteria on measures of psychological distress. For males, there was a non-significant trend for greater deployment experience to predict psychological distress.

Discussion

As predicted, deployment length was related to decreased wellbeing in male soldiers returning from a peacekeeping deployment. This effect was not found for females. The second deployment history variable, number of previous deployments, was not significantly related to psychological wellbeing for either gender despite previous research suggesting such a relationship.

The current study used rank, length of deployment (in months) and number of previous deployments to predict male and female soldiers exceeding criteria on the

psychological screen. Rank was a strong predictor for both genders and for both males and females the likelihood for exceeding criteria on the psychological screen was highest for junior enlisted. Rank was a strong predictor for both genders and for both males and females the likelihood for exceeding criteria on the psychological screen was highest for junior enlisted.

When examining deployment history, the research findings demonstrated a clear divergence between male and female soldiers. Males appeared to be negatively affected by peacekeeping missions that exceeded 5 months. For females, the data did not present a relationship between rates of psychological distress and deployment length. Both of these findings consistent with previous research (e.g. Ritzer, Campbell, & Valentine, 1999; Huffman, Adler, & Castro, 1999; Pierce, 1997).

The impact of previous peacekeeping experience is less clear. For males, there is only a trend indicating that deployment experience is a positive predictor of psychological wellbeing. Studies have shown that previous peacekeeping experience led to either greater mental health for experienced peacekeepers compared to inexperienced peacekeepers or to no difference in wellbeing between the two groups. The current study finds that previous deployment experience is not a predictor for psychological wellbeing in women. Thus the trend found in this study reflects this relatively weak finding and suggests the need for future research to identify moderators that may underlie this phenomenon. For example, the type of peacekeeping experience coupled with personality variables may shed light on the effects of peacekeeping experience.

There has been a paucity of research on women and military deployments, and even less research on the occupational stress of peacekeeping missions on women.

Borrowing from the nonmilitary occupational health literature, there are established gender differences in the way in which women and men perceive and cope with work-related stress (Jick & Mitz, 1985; Spielberger & Reheiser, 1994). Such findings support the results that deployment history has a different effect on men than women. One limitation in the study is that it does not allow us to understand why these deployment history differences exist. Future studies need to examine this issue further by focusing on male and female perceptions of deployments and gender differences in coping.

References

- Bartone, P.T., Vaitkus, M.A. and Adler, A.B. (1994). Measuring post-traumatic stress symptoms in soldiers. Paper presented at the USAREUR/7A Army AMEDD Symposium, Garmisch-Partenkirchen, Germany.
- Castro, C.A., & Adler, A.B. (1999, Autumn). The impact of operations tempo on soldier and unit readiness. Parameters, 86-95.
- da Silva, T., Paiva T., Elsa T., Rodrigues A., & Ricardo A., (1998). Portuguese military in peacekeeping missions. A psychological evaluation model: epistemological and methodological contributions. Proceedings of the 34th International Applied Military Psychology Symposium, Paris, 72-84.
- Ewing, J.A. (1984). Detecting alcoholism: the CAGE questionnaire. Journal of American Medical Association, 252, 1905-1907.
- Hosmer, D. W., & Lemeshow, S. (1989). Applied Logistic Regression. New York: John Wiley and Sons.
- Huffman, A.H., Adler, A.B., & Castro, C.A. (1999). The Impact of Deployment History on the wellbeing of military personnel. (DTIC: ADA 361109). Alexandria, VA: Defense Technical Information Center.
- Jick, T.D., & Mitz, L.F. (1985). Sex differences in work stress. Academy of Management Review, 10, (3), 408-420.
- Kulka, R.A., Schlenger, W.E., Fairbank, J.A., Hough R.L., Jordan, B.K., Marmar, C.R., & Weiss, D.S. (1990). The National Vietnam Veterans Readjustment Study. New York: Bunner/Mazel, Inc.

Litz, B.T. (1996). The psychological demands of peacekeeping for military personnel. Clinical Quarterly, 6, (1), 1-8.

Martinez, J., Huffman, A. H., Adler A.B., & Castro C.A. (in press) Assessing psychological readiness in U.S. soldiers following NATO operations. International Review of the Armed Forces Medical Services.

McCarroll, J.E., Fagan, J.G., Hermesen, J.M., & Ursano, R.J. (1997). Post traumatic stress disorder in U.S. Army Vietnam Veterans who served in the Persian Gulf War. The Journal of Nervous and mental Disease, 185, (11), 682-685.

Perconte, S.T., Wilson, A.T., Pontius, E.B., Dietrick, A.L., & Spiro, K.J. (1993). Psychological and War-Stress Symptoms among Deployed and Non-Deployed Reservists following the Persian Gulf War. Military Medicine, 158, (8), 516-521.

Pierce, P.F. (1997). Physical and emotional health of gulf war veteran women. Aviation Space Environmental Medicine, 68, (4), 317-321.

Ritzer, D.R., Campbell, S.J., & Valentine, J.N. (1999). Human dimensions research during operation "Joint Guard," Bosnia. U.S. Medical Department Journal 1/2/3, 5-160.

Spielberger, C.D., & Reheiser, E.C. (1994). The Job Stress Survey: Measuring Gender Differences in Occupational Stress. Journal of Social Behavior and Personality, 9, (2), 199-218.

Vincent, C., Chamberlain, K., Long, N. (1994). Relation of military service variables to posttraumatic stress disorder in New Zealand Vietnam War veterans. Military Medicine, 159 (4), 322-326.

Wolfe, J., Brown, P.J., Furey, J., & Levin, K.B. (1993). Development of a wartime stressor scale for women. Psychological Assessment, 5, (3), 330-335.

Zung, W.K.W. (1964). A self-rating depression scale. Archives of General Psychiatry, 12, 63-70.

Table 1
Demographics by Gender (N=12,336)

	Female n=1355 (11.4%)		Male n=10503 (88.6%)	
Deployment Length (mean in months)	5.6		5.7	
Deployment History*				
Previously Deployed	227	14.6	2813	21.3
Never Deployed	1327	88.7	10415	78.7
Rank**				
Enlisted (E1-E4)	921	60.2	6662	50.8
NCOs (E5-E9)	431	28.2	4609	35.2
Officers	179	11.7	1832	14.0
Race/ethnicity**				
White	627	46.4	6446	61.9
African American	480	35.6	2224	21.3
Hispanic	111	8.2	965	9.3
Other	132	9.8	782	7.5
Marital Status ¹ **				
Single	789	51.3	5169	39.3
Married	471	30.6	6937	52.7
Separated/Divorced	277	18.0	1052	8.0
Education**				
High School/GED	328	32.3	3605	38.7
Some College	546	53.8	4404	47.2
College Graduate	140	13.8	1316	14.1

¹Percentages do not equal 100% because widowed soldiers were not included (n=13)

*p<.05

**p<.01

Table 2
Logistic Regression Analysis of Exceeding Criteria on one of the Three Scales

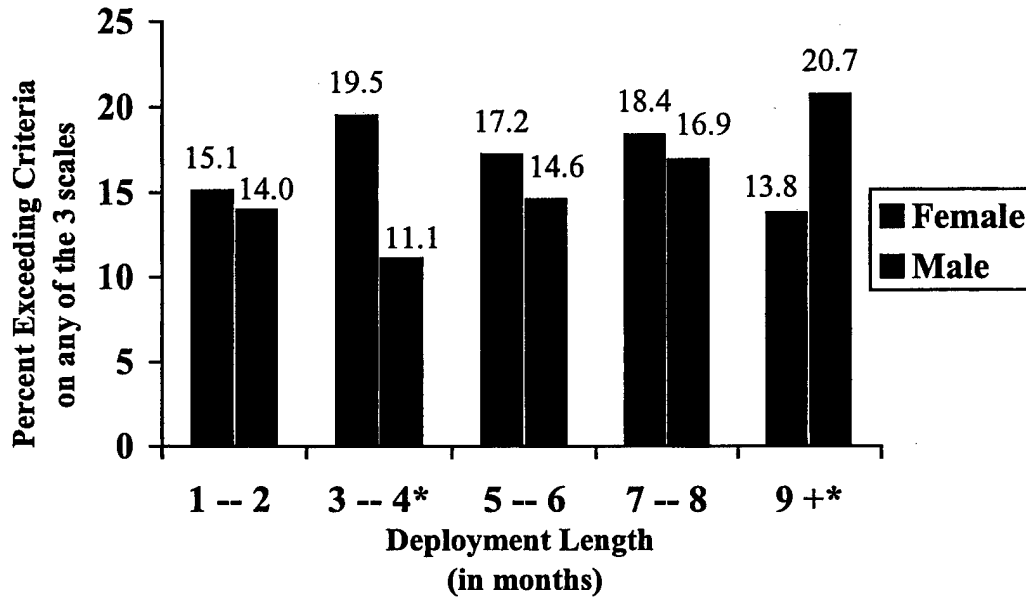
Variable	Regression Coefficient (B)		SE	
	Female	Male	Female	Male
Deployment Length	.97	1.01**	.035	.013
No Deployment History	1.21	1.16 ¹	.232	.078
Rank				
Enlisted (E1-E4)	1.90*	3.55**	.260	.107
NCOs (E5-E9)	1.30	2.22**	.277	.112
Officers				
Constant	.145**	.034**	.345	.140

*p<.05

**p<.01

¹p=.053

Figure 1
Descriptive Statistics of Deployment Length and Percent Exceeding Criteria on any of the Three Scales by Gender



Note. In order to isolate each individual Deployment Length time period, Fischer's Exact Test were run on each time period to compare wellbeing by gender.

* $p < .05$